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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Bernd Bartenbach

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EXAMINER

BOYER, RANDY

ART UNIT

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1797

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/806,191	Applicant(s) BARTENBACH ET AL.	
	Examiner RANDY BOYER	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10-20, 22-25 and 27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10-20, 22-25 and 27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>18 June 2009</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office Action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 18 June 2009 has been entered.

Response to Amendment

2. Examiner acknowledges Applicant's response filed 18 June 2009 containing amendments to the claims and remarks.
3. Claims 1-8, 10-20, 22-25, and 27 are pending. Claim 27 is newly added.
4. The previous rejections of claims 1-8, 10-20, and 22-25 under 35 U.S.C. 103(a) are withdrawn in view of Examiner's reconsideration of the references.
5. New grounds for rejection of claims 1-8, 10-20, and 22-25 are entered under 35 U.S.C. 103(a). Likewise, newly added claim 27 is rejected under 35 U.S.C. 103(a).
6. Finally, the previous rejections of claims 8 and 10-18 on the basis of nonstatutory obviousness-type double patenting are maintained. The rejections follow.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 1-7, 20, 22-25, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Passler (US 5,789,644) in view of Stapf (US 6,365,792).

11. With respect to claims 1, 20, and 27, Passler discloses a process for producing acetylene by partial oxidation of hydrocarbons using oxygen (see Passler, column 1, lines 4-6), in a reactor comprising a reaction chamber and a quench area (see Passler, column 2, lines 25-39), in which starting materials are supplied to the reaction chamber through channels of a burner block (see Passler, column 2, lines 29-33), where in the reaction chamber the high-temperature reaction having a short residence time (e.g., from 1 to 100 ms) (see Passler, column 1, lines 26-30) takes place at a temperature of at least 1500°C (see Passler, column 1, lines 30-32) and the reaction mixture is subsequently rapidly cooled in the quench area (see Passler, column 1, lines 32-33), characterized in that in the quench area a direct cooling to a temperature below about 300°C takes place by supply of an evaporating medium (see Passler, column 1, lines 33-35).

Passler does not explicitly disclose wherein the process further comprises a subsequent *indirect* cooling in a heat exchanger of the quench area.

However, in an improvement to Passler's process, Stapf discloses a two-stage cooling in the quench area of the reactor - a direct quenching (pre-quenching) to a temperature of at most 1000°C (see Stapf, column 4, lines 40-43) followed by indirect cooling with a heat exchanger to a temperature below about 300°C (see Stapf, column 4, lines 40-43; column 5, lines 37-42; and column 6, lines 5-9). Stapf explains that operating the partial oxidation with such a two-stage quenching operation provides for a more economical process, for example, by using the heated coolant from the heat exchanger to pre-heat the feedstock (see Stapf, column 5, lines 37-40).

Therefore, the person having ordinary skill in the art would have been motivated to modify the process of Passler to incorporate use of the two-stage quenching operation of Stapf in order to achieve a more economical process.

Finally, the person having ordinary skill in the art would have had a reasonable expectation of success in modifying the process of Passler as described above because: (1) both Passler and Stapf are directed to processes for the preparation of acetylene via partial oxidation of hydrocarbons using oxygen; and (2) Stapf explicitly describes his process as an improvement over that of Passler.

12. With respect to claim 2, Stapf discloses wherein the starting materials starting materials may be premixed (see Stapf, column 2, lines 36-37).

13. With respect to claims 3, 22, and 23, Stapf discloses wherein the direct cooling takes place at a temperature of at most 1000°C (see Stapf, column 4, lines 40-43).

14. With respect to claim 4, Stapf discloses wherein there is at least one stage of direct cooling (see Stapf, column 4, lines 40-43).

15. With respect to claim 5, Stapf discloses wherein the quench medium is water or oil (see Stapf, column 3, lines 2-6).

16. With respect to claims 6 and 7, Stapf discloses wherein the indirect cooling takes place to less than 300°C (see Stapf, column 6, lines 7-9); and wherein steam may be generated (see Stapf, column 6, lines 9-10).

17. With respect to claim 24, Stapf discloses wherein the quench medium may be water (see Stapf, column 3, lines 2-6) and wherein the direct cooling lowers the reaction temperature to some point between 100°C and 1000°C (see Stapf, column 3, lines 2-6;

and column 4, lines 40-43) – i.e. above the boiling point of water, thereby expecting a “complete evaporation” of the quench medium.

18. With respect to claim 25, Stapf makes reference to the process of Passler (see Stapf, column 3, lines 8-9) which Examiner submits is an example of the Sachsse-Bartholomé process for acetylene production. In this regard, Applicant admits that such process produces an acetylene yield of about 29% based on carbon (see Applicant’s specification, page 8, lines 23-25).

19. Claims 1, 8, and 10-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Passler (US 5,789,644) in view of Stapf (US 6,365,792) and Bakker (US 3,640,739).

20. With respect to claims 1 and 8, see discussion *supra* at paragraph 11.

Neither Passler nor Stapf discloses wherein fire-resistant ceramic is introduced into the reaction chamber in the form of stones or bricks or as a cast or tamped mass and subsequently compressed, dried, and calcined.

However, Passler discloses wherein the reactor components must be “heat-resistant” (see Passler, column 2, line 54), presumably owing to the very high reaction temperatures which are on the order of about 1500°C to about 2000°C (see Passler, column 1, lines 26-36). In this regard, Bakker discloses a refractory (heat-resistant) material made from a high purity alumina refractory brick batch mix consisting of 85% – 95% alumina by weight (see Bakker, column 2, lines 10-12). Bakker discloses that the refractories of his invention are of increased strength, higher density, lower porosity, and higher refractoriness than other refractories commercially available (see Bakker,

column 1, lines 62-67). Bakker further discloses whereby the alumina refractory (“fire-resistant ceramic”) may be shaped into bricks, compressed, dried, and calcined (see Bakker, column 3, lines 58-70).

Therefore, the person having ordinary skill in the art would have been motivated to modify the reactor of Stapf and/or Passler to incorporate use of Bakker’s refractory material as a heat-resistant liner for the inside of their reactors in order to protect the reactor internal components from the very high reaction temperatures occurring in Stapf’s and Passler’s acetylene production processes.

Finally, the person having ordinary skill in the art would have had a reasonable expectation of success in using the refractory brick batch mix of Bakker as a liner in the reactor Stapf and/or Passler because: (1) Passler expresses a need for the use of heat-resistant materials inside the reactor; and (2) Bakker notes that his brick batch mix may be pressed into any desired shape (see Bakker, column 3, lines 58-64), i.e. in order to conform to the particular configuration of the end-use application.

21. With respect to claim 10, Bakker discloses pressing the refractory mix into any desired shape (see Bakker, column 3, lines 58-59).

22. With respect to claims 11-13 and 16, Passler discloses a quench area (10) aligning in the direction of the longitudinal axis of the reaction chamber (7); and wherein a reaction chamber (7) and transition of the reaction chamber (7) to quench area (10) designed in the form of an annular gap (see Passler, Fig. 1) (showing an expected gap in the shape of an annulus being formed by the component (not labeled) extending directly from a central region of the reaction chamber (7) and into the quench area (10)).

23. With respect to claims 14 and 15, Passler discloses channels (6) in the burner block (5) aligned in the direction of the longitudinal axis of the reaction chamber (7) (see Passler, Fig. 2).

24. With respect to claims 17 and 18, Passler discloses the supply (8) of quench medium via quench nozzles (9) attached to one or more distributors arranged radially to the main flow direction of the reaction mixture (see Passler, Fig. 1).

25. With respect to claim 19, Passler discloses a design range for the numbers and diameters of the channels passing through the burner block (see Passler, column 2, lines 9-14), explaining that the nominal size of the burner block and burner are determined by the number and size of the channels (see Passler, column 2, lines 9-14), thereby suggesting the possibility for scale-up of the reactor as desired.

Double Patenting

26. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29

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USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

27. Claims 8 and 10 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 4-6 of U.S. Patent No. 6,869,279. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 8 and 10 of the instant application are structurally substantially similar in terms of both subject matter and scope to claims 1 and 4-6 of U.S. Patent No. 6,869,279. In this regard, Examiner notes that any *process* limitations (e.g., operating temperatures) found within an *apparatus* claim are considered non-limiting as *apparatus* claims are defined by *structural* limitations. See MPEP § 2114.

28. Claims 8 and 10-18 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 3-8, 12, 13, 16-18, and 21-23 of copending Application No. 10/806,232. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 8 and 10-18 of the instant application are structurally substantially similar in terms of both subject matter and scope to claims 3-8, 12, 13, 16-18, and 21-23 of copending Application No. 10/806,232. In this regard, Examiner notes that any *process* limitations (e.g., operating temperatures) found within an *apparatus* claim are considered non-limiting as *apparatus* claims are defined by *structural* limitations. See MPEP § 2114.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

29. Applicant's arguments filed 5 December 2008 have been fully considered but they are not persuasive.

30. Examiner understands Applicant's arguments to be:

- I. In contrast to Bakker, Applicant's claim 8 does not require firing before the reactor is used for executing the reaction.
- II. Claims 1 and 4-6 of U.S. Pat. No. 6,869,279 are not directed to a reactor for carrying out a high temperature reaction where the reaction mixture is subsequently rapidly cooled in the quench area, characterized in that in the quench area firstly a direct cooling to a temperature in the range from 650°C to 1200°C takes place by supply of an evaporating

quench medium and subsequently in the quench area an indirect cooling in a heat exchanger takes place.

- III. With respect to the nonstatutory obviousness-type double patenting rejections made in view of pending U.S. Application Serial No. 10/806,232, Applicant's request the rejections be held in abeyance.

31. With respect to Applicant's first argument, such argument fails to comply with 37 CFR 1.111(b) because it amounts to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

32. With respect to Applicant's second argument, Examiner notes that process limitations included within an apparatus claim do not structurally distinguish the claimed apparatus from that of a prior art apparatus. See MPEP 2114.

33. With respect to Applicant's third argument, inasmuch as both the instant application and U.S. Application Serial No. 10/806,232 are before the same examiner, then Examiner agrees to hold this rejection in abeyance until such time that allowable subject matter is indicated in either of the applications. Until such time however, the rejection will be maintained on the record.

34. The remainder of Applicant's arguments is considered moot in view of the new grounds of rejection.

Conclusion

35. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Randy Boyer whose telephone number is (571) 272-

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7113. The examiner can normally be reached Monday through Friday from 10:00 A.M. to 7:00 P.M. (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola, can be reached at (571) 272-1444. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Randy Boyer/

Examiner, Art Unit 1797

/Glenn A Caldarola/

Acting SPE of Art Unit 1797